PROJECT MANAGEMENT GUIDE

A.K.A. "Proj. Man. in the Public Bldg. Service" **PBS 3425.12a**

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INTRODUCTION

THE PURPOSE AND APPLICATION ON THE GUIDE

This volume provides guidance in the use and application of project management techniques and the assignment of project managers in the Public Buildings Service (PBS). It is primarily concerned with the application of project management procedures involving PBS capital projects having a construction value of $10 million or more. However, the concept and principles of project management can be applied to all regional projects and should be fully integrated into each regional management structure, business process, and operating procedure.

BACKGROUND

Major facility acquisition and upgrade projects require significant investments of General Services Administration (GSA) resources and result in long-term commitments to the housing of Federal agencies. To a large extent, they define the image and presence of the Federal Government in the communities where they are located.

The successful development and delivery of such projects requires that all of the PBS organizational elements involved be directed and coordinated in an uninterrupted flow of project-related activities. In both the central and regional offices of PBS, these elements have been segmented primarily in terms of their functional activities (e.g., planning, real estate, design, construction, contracting). For capital projects, each of these functional organizational elements in the regional offices is responsible for one or more phases of project development and delivery (e.g., space programming, site acquisition, construction). This type of organizational arrangement and project development sequence places a

demand for increased management effort on both the Assistant Regional Administrator for Public Buildings Service and the director-level incumbents of PBS functional offices to ensure the achievement of project goals and objectives.

The techniques of project management have been implemented by PBS to address this necessary increase in management effort. Project management provides the Assistant Regional Administrator with a single point of accountability--the project manager--responsible for orchestrating a broad array of project-related activities throughout the project-development life cycle. The process focuses attention on the project manager and the importance of coordinated planning and commitment in the interaction of PBS organizational elements. It stresses project-team organization and staffing, as well as project control, evaluation, and direction as project delivery progresses through the activities of the functional organizations. It emphasizes the PBS-wide scope of project development and delivery, with PBS organizational elements performing coordinated project tasks as part of a timely, integrated team effort. Its guiding aim is to ensure that major projects are executed in such a way as to best serve the long-term interests of the government. The following chapters discuss project management applications designed to achieve this objective and fulfill the responsibilities of PBS.

CHAPTER 1. IMPLEMENTING PROJECT MANAGEMENT IN PBS

ORGANIZING FOR PROJECT MANAGEMENT

The introduction of project management in PBS has involved the overlay of a project-based structure on an existing, function-based organization. This has produced a composite, matrix-type organization, with project managers added to manage designated projects.

A diagram of this organizational matrix appears in Figure 1 below. The undesignated position at the top of the diagram can represent either the Assistant Regional Administrator for Public Buildings Service or one of the regional PBS functional-organization directors. Note that the lines of authority down through the functional organizations (vertical axis) and lines of influence projected along the project management (horizontal) axis converge upon a project team's individual functional-organization representatives.

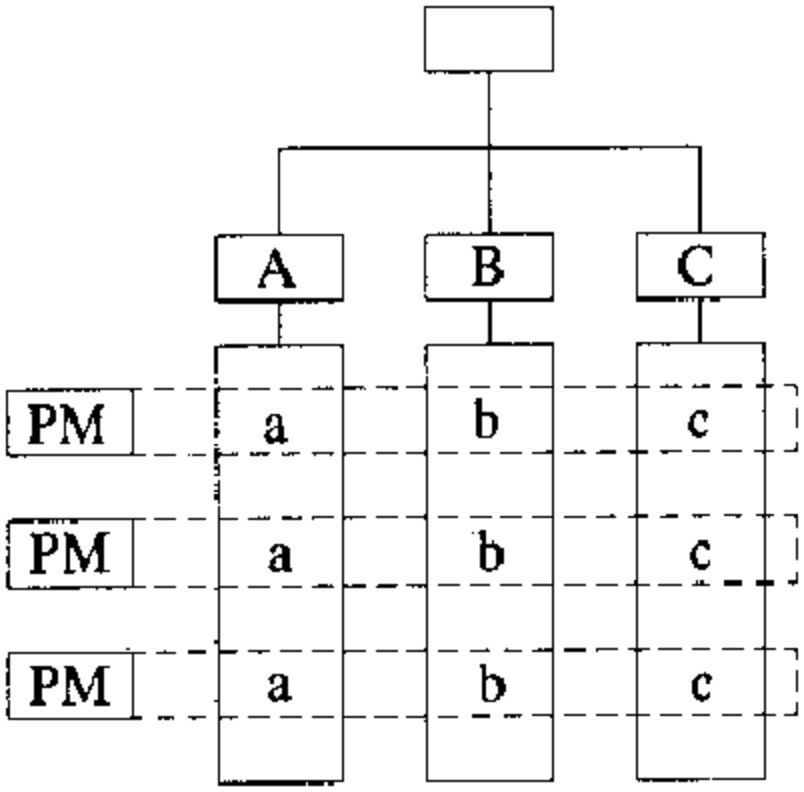

Figure 1. Project Management Organization Matrix

The matrix organization retains the technical strength of PBS's existing functional elements and substantially raises awareness of and commitment to the project continuity and integrity sought through the efforts of PBS project managers. It also provides the Assistant Regional Administrator for Public Buildings Service with a single, easily-accessed point of contact, accountability, and direct management involvement at any time in the execution of the project. Figure 2 provides a more detailed illustration of coordinating relationships in the PBS project management context.

MATRIX MANAGEMENT. The conflicts normally associated with matrix organizations are minimized in the PBS system because functional organization directors retain authority and responsibility for the accomplishment of assigned project activities. Project managers have no formal authority over functional-organization personnel resources. However, the project management process provides for the preparation of a coordinated project management plan for each project, under which the functional-organization directors are assigned activities for project execution. Directors must commit their organizations to performing in accordance with the authorized criteria for project scope, schedule, cost and quality.

In addition to the internal controls utilized by each functional-organization director, overall project controls are exercised by project managers to ensure the attainment of all project goals and objectives. The project manager's efforts are facilitated by one or more representatives appointed from each functional organization to serve on the project team. The project manager works through these team members toward the accomplishment of project activities and related project objectives.

Ultimately, the project manager and the Assistant Regional Administrator for Public Buildings Service play the pivotal roles in the

TYPICAL REGIONAL PROJECT MANAGEMENT ORGANIZATION

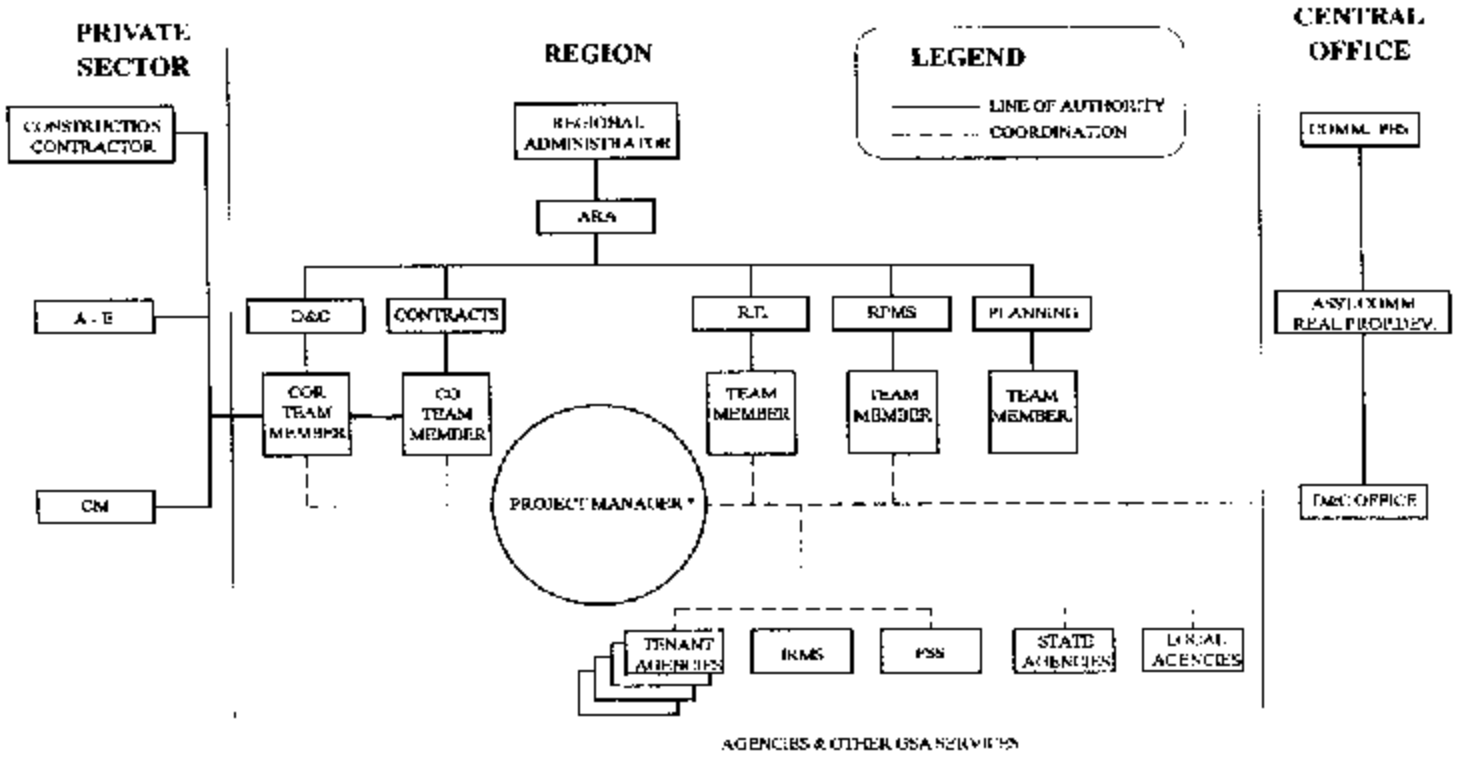

Figure 2. Typical Regional Project Management Organization

* Project manager reports to either the functional organization director for the project or the ARA.

PBS project management matrix. The personal capabilities of the project manager and the Assistant Regional Administrator's commitment to project management are the critical components of this organizational process and the key factors in the likelihood for successful project outcomes.

ROLES AND RESPONSIBILITIES

THE ASSISTANT COMMISSIONER FOR REAL PROPERTY DEVELOPMENT (AC) is the PBS program manager for project management. The AC's responsibilities include the development of PBS-wide policies and procedures for project management applications and the provision of guidance, instruction, training, and other forms of assistance in the implementation and maintenance of performance proficiency. The AC establishes guidelines for the application of project management procedures on projects; establishes and maintains performance baselines, determining regional performance accordingly; and, when appropriate, directs that policies and procedures be changed to promote maximum efficiency. Project Management Plans are subject to the joint approval of the AC and the cognizant Assistant Regional Administrator for Public Building Service.

THE ASSISTANT REGIONAL ADMINISTRATOR FOR PUBLIC BUILDINGS SERVICE (ARA) is the accountable regional official for the life-cycle management of all facility acquisitions and upgrades. The ARA's responsibilities include directing the implementation of project management policies and procedures, exercising discretionary selection authority in the application of project management to certain projects, and the selection and appointment of project managers. Responsibilities also include the direction and coordination of all project-specific activities involving all of the regional PBS functional organizations. The ARA reports project performance and recommends policy and procedure changes to promote

maximum efficiency in project development and delivery. In addition to sharing approval authority for project management plans with the AC, the ARA is responsible for assuring that such plans are kept current, approving appropriate changes, and keeping the AC informed of all approved project management plan changes.

AGENDA STAFF. When utilized by an ARA, regional agenda staff can serve as an important resource in coordinating the resolution of project-related problems that the project manager has been unable to resolve either within the project team or with functional-organization directors.

REGIONAL FUNCTIONAL-ORGANIZATION DIRECTORS. The roles and responsibilities of PBS's functional-organization directors in the regional Planning, Real Estate, Design and Construction, Real Property Management and Safety, and Contracts organizations are not significantly changed in the project management context.

Directors participate in the development of project management plans and remain responsible for carrying out management and substantive functions for project activities assigned in accordance with the agreements and commitments contained in approved project management plans. Directors are responsible for interorganizational coordination, communication and cooperation. They are also responsible for the commitments of their respective organizations to project planning, scheduling, cost control, and the uninterrupted delivery of project assignments. This includes organizing and deploying resources as necessary to meet commitments and expeditiously alerting project managers when potential problems arise in their areas of responsibility.

Directors are charged with ensuring compliance with all statutory, regulatory, and policy requirements bearing on project execution and associated with the functional areas for which they are responsible. They also ensure the professional and technical competency and completeness

of all aspects of their project performance and are responsible for reporting performance and recommending policy and procedural changes to promote maximum efficiency.

Directors designate one or more representatives from their respective organizations to serve on each project team. These representatives maintain open channels of internal communication within their organizations, are directly involved in the performance of project-related functional activities, and are able to speak for their respective directors on all matters within established policy and procedures.

OTHER PARTICIPATING ORGANIZATIONS. Other GSA organizations, client agencies, regulatory boards, and local governments frequently play important roles and make significant contributions in the project development process. PBS functional organizations are expected, in the context of project management, to retain and exercise their normal responsibilities for interfacing and coordinating with outside interests. The project manager is expected to ensure that all such organizations are identified, that they understand and accept their roles, and that they are committed to cooperating in the meeting of scheduled milestones. This requirement includes keeping the involved organizations adequately informed and providing them with reasonable response times when their input is needed.

PROJECT TEAMS. Each project is assigned a team headed by a project manager and comprised of the designated representatives of the regional functional organizations. Team members are jointly responsible in the collaborative effort to provide project planning, scheduling, coordination, communication, documentation, management, and leadership. They are individually responsible for ensuring that the project objectives assigned to their respective functional organizations are effectively and efficiently completed in accordance with established commitments.

A more detailed itemization of team members' roles and responsibilities:

THE PLANNING REPRESENTATIVE provides insight into requirements published in the annual planning call, and assures that the Prospectus Development Study (PDS) addresses those requirements as well as the environmental requirements covered in the National Environmental Policy Act (NEPA), the historic preservation requirements mandated in Section 106 of the National Historic Preservation Act (NHPA), and the issues of economic viability covered in Office of Management and Budget Circular A104 (OMB A104).

THE REAL ESTATE REPRESENTATIVE supplies all of the required information pertinent to project tenants and their space needs. Specific responsibilities include:

- Providing tenant requirements to the PDS contractor.
- Determining where tenants can be relocated if the project requires that their space be vacated.
- Determining move requirements within the project if tenants are to remain in affected spaces during the life of the project.
- Briefing tenants about the project, and about what will be required of them during the project.
- Obtaining leased space, if needed, for tenant relocation.
- Extending existing leases, if that need arises.
- Determining what tenant requirements will be paid for by the tenants.
- Keeping the project manager informed of all tenant-related problems that may jeopardize the successful completion of the project.
- Coordinating all telecommunications requirements.
- Obtaining tenant approval of final space layouts.

THE DESIGN AND CONSTRUCTION REPRESENTATIVE typically serves as the contracting officer's representative (COR) for the A-E, CM, and construction contracts, with administrative responsibility for the schedule, budget, and quality-control functions related to those contracts. The Design and Construction representative also provides the project manager with needed technical support and the management of funds for design and construction services and new construction including reimbursable funds associated with new facilities. These responsibilities include providing the project manager with estimating support and up-to-date funding data. The representative is also responsible for identifying and providing members for (A-E) selection boards and construction manager source selection boards.

THE REAL PROPERTY MANAGEMENT AND SAFETY REPRESENTATIVE provides needed information pertinent to buildings and building operation. Specific responsibilities include:

- Providing the project manager and the PDS contractor with a copy of theobuilding evaluation report (BER).
- Keeping the project manager informed of any changes in the BER. Providing specialized support to the project manager in the areas of fire-safety, asbestos, and energy conservation.
- Keeping the project manager informed about the status of repair and alteration funds including reimbursable funds for work in GSA owned space.
- Coordinating any nonprospectus work added to a prospectus project. Concurring with the Real Estate representative on project aspects to be funded by tenant agencies.
- Keeping the project manager informed of any building, operational, and funding problems that may jeopardize the successful completion of the project.

THE CONTRACTS REPRESENTATIVE provides the contracting officer and the project manager with needed support during the life-cycle of the project which includes:

- Preparing and issuing solicitation documents for bids and offers on all anticipated contracts.
- Publicizing all procurement actions associated with the project, conducting negotiations, and opening/receiving bids/proposals having issued required amendments, clarifications, and conducted all necessary conferences.
- Determining responsive, responsible bidder or offeror following applicable regulations, and processing contract awards.
- Administering all contracts including modifications, payments, exercising options, resolving claims, issuing final decisions, processing terminations, and assessing liquidated damages.

PROJECT MANAGERS are appointed to represent and assist the ARA in focusing management attention on the successful achievement of all project goals and objectives, with appropriate emphases on project schedule, budget, scope, and quality requirements. Project managers are responsible for planning, coordinating, and controlling all of the primary and supporting activities upon which the successful completion of a project is dependent. They work with PBS functional organizations through the assigned members of their project teams to ensure that all project goals and objectives are being adequately addressed in a timely manner and are ultimately accomplished as planned. Their further responsibilities include:

- Verifying the validity and practicability of project objectives and requirements, scopes of work, and schedule and budget constraints.
- Planning, coordinating, and controlling the efforts of all GSA organizational elements and other entities whose participation or

support is required for the accomplishment of the project, including central and regional offices, client/tenant agencies, professional services contractors and other private sector interests, community groups, and advisory or regulatory bodies.

- Exercising authority, as project team leaders, to prompt and instruct team members regarding their commitments and responsibilities to the proper and timely execution of the project.
- Developing and securing all necessary approvals of the initial project management plan and revisions of the plan during project execution.
- Monitoring and evaluating project conditions and exercising management and leadership initiatives as those conditions require--i.e., anticipating and resolving project-related problems to the maximum extent possible within vested authority, negotiating the resolution of problems not soluble within that authority, developing contingency plans to mitigate the impact of unresolved problems, and, finally, elevating nonnegotiable problems to the appropriate management level for resolution.
- Validating resource (staffing and dollar) estimates, justifying resource requirements for project execution within the overall project authority and project funding constraints provided in enabling legislation (or otherwise imposed), and ensuring that resources expended in project accomplishment do not exceed allocations.
- Establishing and maintaining a project communications network--i.e., serving as the primary point of contact for information on the project; providing periodic performance reports and other management information sufficient to satisfy all standing central and regional office reporting requirements, including those for automated information systems; and alerting regional and (through the ARA) central office officials immediately when major problems arise.
- Recommending policy and procedure changes to promote maximum efficiency on current and future projects.

SELECTING PROJECTS

Projects meeting the following criteria are selected for project management application:

- All direct-funded new construction and repair and alteration projects having construction values of $10 million or more.* * *
- All GSA lease-purchase (least cost) projects having construction values of $10 million or more.* **
- All building purchase projects involving alteration and/or build-out work valued at $10 million or more.* * *
- Other projects designated by the PBS Commissioner, based on sensitive or unique features or conditions, including major reimbursable and/or lease consolidation projects.

ARA's are encouraged to establish criteria for the local application of project management on other complex or sensitive projects in their respective areas.

ARA's are also encouraged to apply the concepts and principles of project management to all regional projects, including prospectus-level projects valued between $1.5 million and $10 million. The techniques of project management can and should be fully integrated into each regional management structure, business process, and operating procedure.

*For phased-construction or other incremental-delivery means involving these project categories, the $10 million threshold applies to the total project construction value, regardless of the amount for each increment.

**The PBS Commissioner may exclude routine, noncomplex projects exceeding $10 million in construction value on a case-by-case basis.

SELECTING PROJECT MANAGERS

PROCEDURES. A project manager for each designated project is selected by the ARA no later than the point of Central Office authorization to proceed with project execution. For GSA-funded and lease-purchase projects, such authorization is issued in the form of a notice to proceed with the preparation of documents for publicizing the project to prospective design firms, design-build contractors, or developers.* For building-purchase projects, authorization normally comes in the form of a notification of apportionment of funds for the building purchase.

The ARA's appointment of a project manager should be announced in a manner that names the selected individual, outlines assigned duties and responsibilities, and indicates the project manager's placement in the regional organization and the communication channels to be observed.

CRITERIA. Project management should be either the sole or the primary responsibility of each individual designated a project manager, and the ARA should assess the workloads of individual candidates as a selection factor. A project manager may have concurrent responsibility for several projects; if he or she has collateral duties beyond project management, these duties must be subordinate to and not interfere with the performance of the project manager's primary role.

In considering the available candidates for selection, the ARA should also assess each candidate's capabilities in light of the requirements of the designated project. The ARA's objective should be to achieve the best possible match between the project's requirements and the project manager's capability to respond to those requirements.

*For design-build projects, the authorization to publicize may be delayed until Congressional authorization of the project is reasonably assured.

In most instances, project managers perform their required duties without personal line-authority. To be effective in the absence of line-authority, a project manager must be a good communicator and coordinator; an effective leader, motivator, and negotiator; a superior planner, with PBS-wide knowledge of project delivery activities; and an astute observer of PBS operations at both the micro and macro levels. A successful project manager must also possess a finely honed sense of perspective and timing in order to ensure that potential obstacles to project progress are identified and resolved before becoming delay factors, and that scheduled events take place as planned and as required.

The project manager's task is a challenging one, and one unique in the organizational and functional hierarchy of PBS. The project manager must anticipate and evaluate the decisions required of others and ensure that such decisions are both timely and appropriate for the circumstance. Experience in the application of project management teaches that, through superior knowledge and performance, a PBS project manager can become quickly established as a respected and effective leader in the eyes of his or her colleagues and peers. The attainment of such status can significantly influence the extent to which the cooperation and support necessary for the attainment of project goals and objectives is forthcoming.

THE PROJECT MANAGER'S AUTHORITY

Any authority formally delegated by the ARA to a project manager should be stated in the project manager's appointment order. As noted above, however, project managers operate in most instances without personal line-authority. Accordingly, the normal function of a project manager is that of a staff coordinator for either the ARA or a designated functional-office director. It is for this reason that project managers must have strong staff skills. Problems that cannot be resolved by the project

manager should be elevated quickly to the appropriate PBS organizational level for resolution or for the renegotiation of the project objectives affected.

REPORTING LEVELS

A project manager's placement in the regional organizational structure and his or her related reporting relationships will be determined by the ARA and described in the project manager's appointment announcement. In any circumstance, a PBS project manager reports directly to either the ARA or the director of the PBS functional organization having primary responsibility for the designated project's execution.

Given the personal limitations imposed by the span of control, ARAs must recognize that they may not be able to manage effectively both a region's established organizational elements and a substantial number of projects whose project managers report directly to the ARA. ARAs are advised to consider limiting the number of projects for which they maintain direct-reporting relationships with project managers; with the most significant projects being handled in this way, ARA-appointed project managers involved in other projects can report to the appropriate PBS functional-organization directors.

CHAPTER 2. PLANNING AND ORGANIZING THE PROJECT

PREPARATION

UNDERSTANDING THE PROJECT. The first task of a newly designated or appointed project manager is to develop an understanding of the background and current status of an assigned project. The project manager must verify the validity and practicability of project objectives, the scope of work, schedule and budget constraints, and other critical project components.

It is important to recognize that, in the PBS project management system described in this guide and set out in GSA ORDER PBS 3425, PROJECT MANAGERS IN THE PUBLIC BUILDINGS SERVICE*, project managers are appointed after most of the formative project planning has been completed and approved. With the introduction of the Prospectus Development Study procedure (the details of which are covered in PBS's PROSPECTUS DEVELOPMENT STUDY GUIDE), a substantial amount of the planning effort and resultant project definition and decision-making has been moved forward to the pre-prospectus stage of project development. Project managers should find the level of analysis and detail required for the preparation of a PDS helpful in their efforts to understand already-established project goals and objectives, design criteria, implementation strategies, schedules, budgets, and other relevant information. They should also find that it can contribute substantially to the project management plans discussed later in this chapter.

* GSA ORDER PBS 3425, PROJECT MANAGERS IN THE PUBLIC BUILDINGS SERVICE (Paragraph 5a) stipulates, "The life-cycle for formal project management in PBS. . . does not begin until projects are authorized. The interval from identification of need to project authorization ... is referred to as the project development stage ....

VALIDATING THE PROJECT. The beginning of a project manager's involvement with a project is also an appropriate time for the project manager--who will be responsible for managing the attainment of all project goals and objectives--to make an independent verification and validation of the practicability of successfully completing the project as authorized. It should be noted, however, that the PDS is a major source document for the preparation of the project management plan. The project manager's validation is an action separate from that performed by the project design architect-engineer prior to the initiation of design activities.

BACKGROUND DOCUMENTS. A variety of predesign documents other than the PDS and the prospectus may play important roles in a project manager's preparation. These materials can include building engineering reports, seismic evaluations, historic building evaluations, fire and safety evaluations, occupational health evaluations, handicapped accessibility evaluations, geotechnical studies, site and boundary surveys, area and community master plans, housing plans, and environmental impact assessments.

ORGANIZATIONAL ISSUES. In preparing for the role of project team leader, a project manager should also review and develop a current understanding of the PBS region's organization, functional relationships, operations, delegations of authority, key personnel, management support systems, and other similar activities and information necessary for effective management in the regional environment.

STAFFING AND ORGANIZING THE PROJECT TEAM

STAFFING. Immediately after appointment, a project manager should determine which of the PBS region's functional organizations will be involved in the project and
should be represented on the project team.

The directors of those organizations should be asked to identify candidates to represent their respective organizations on the team.

In this process, the mutual intent of both project manager and director should be to select representatives with the ability to manage and lead the project activities assigned through the team to their respective organizations. The designation of a project team member represents a commitment of reasonable availability and dedication to the assignments that will be made in the project management plan. To cite an example, team members must be available for frequent meetings and, during certain periods, daily contact with the project manager.

The project manager should be prepared to negotiate with each director for those individuals considered most appropriately suited for particular assignments. The negotiation may entail a more detailed articulation of the roles and responsibilities of project team members, the levels of effort being committed for team members, the delegation of authority and responsibility from director to representative, and the concept of project team organization and operation, including the operational interface between team and functional organization, the procedure for team-organization communication, and other appropriate procedural matters. The project manager should be made particularly aware of other tasks currently assigned to selected representatives.

When the project team is complete, the team assignment and the names of the members of the team enter the record in the "Organization" section of the project management plan.

ORGANIZING. The project manager is responsible for organizing the project team. He or she should respond to that requirement quickly, in anticipation of an immediate assignment to prepare the project management plan. The project manager should initiate the organizing process by assembling the project team and briefing its members on the

project including in that briefing an initial orientation both to the project manager's goals and objectives for the team organization and to the desired methods of operation during the project's execution. Under the project manager's leadership, the team should then collectively develop the organizational structure and initial methodologies, systems, routines, and automated procedures to be applied by the team in carrying out its responsibilities.

Part of the organizing process hinges on the personal role anticipated for the project manager in the day-to-day project activities managed by individual team members. The extent of that role should be decided by the project manager on a project-by-project basis, influenced by his or her personal workload (i.e., other projects and miscellaneous assignments), by the ARA's assessment of the relative importance of the project in question, and by the project manager's assessment of his or her own knowledge of and ability in specific project routines and procedures.

KEY RESPONSIBILITIES. Clearly, certain key responsibilities cannot be passed on to other project team members and must be addressed in the team's organization and operating procedures. These include the project manager's personal responsibility for the attainment of all project goals and objectives, for the establishment and maintenance of overall project control, for the leadership and direction of the project team, for the continual oversight of project progress and status, for serving as the single point of project-execution accountability, and for keeping the ARA and other officials continually informed.

To respond to these and other responsibilities, the project manager should generally avoid involvement in routine project activities, relying on project team representatives to carry out day-to-day activities within their respective organizations in accordance with the approved project management plan. The project team's organization and operating procedures should provide "observation windows" through which the

project manager can overview routine project activities, screen out unnecessary and time-consuming details, and still provide for reports or alerts from other team members on potential problems and other issues or events in which the project manager's involvement may be essential. The project manager should prepare an appropriate listing of matters likely to require project-managerial attention or action, to be included among the team's operating procedures. The project team should also recognize all standing PBS methodologies, systems, and procedures, and utilize them to the fullest extent possible as a basis for the development of the team's operating procedures.

THE PROJECT MANAGEMENT PLAN

The project management plan represents the culmination of project planning activity. Every project meeting any of the criteria for project management designation detailed in the first chapter of this guide must have a project management plan.

The purpose, scope, development, and maintenance of the project management plan are described immediately below. Components of the plan--the project schedule, the project budget, and the assignment of project activities through the plan's network structure--are covered in the following sections of this chapter.

PURPOSE. The primary purpose of a project management plan is to define all parameters of scope, time, and cost within which a project is to be executed; to delineate strategies for successful project implementation; and to establish the roles and responsibilities of all parties involved. The plan serves as an essential "commitment document," communicating to all parties in the project delivery process the necessary details of that process--who is to be involved in the project, what activities they will be required to accomplish, when those activities must be completed--

together with other requirements and parameters to be observed. Seldom, however, does a plan spell out how project activities will actually be accomplished by the functional organizations involved.

All of the PBS organizational elements slated to participate in or support a designated project will be required to participate in the development of the project management plan, through their designated representatives to the project team. Organizational directors will be required to acknowledge their respective roles and responsibilities, dedicate the necessary resources, and commit to the specific schedules detailed in the project management plan, which serves as a record both of the project team's assignment and of the project-related agreements reached among the participants. Thus the project management plan must be concurred in by the appropriate officials from all contributing regional PBS organizations.

PERFORMANCE BASELINE. The project management plan also serves as a firm agreement between the ARA and the AC on the scope, schedule, cost, and quality factors to be embodied in a project. All initial project management plans are put into effect by the joint signatory approval of the ARA and the AC.

The central office establishes a regional performance baseline for each project, using key schedule and budget data from the approved project management plan. Plans are kept current through the ARA's development and issuance of revisions, when they are required. Project management plan revisions must be approved by the ARA and submitted to the AC for the latter's information and appropriate action, which can include the consideration of changes in the regional performance baseline. Management-information reporting by the regional office during a project's execution is based on status relative to the project's latest revised project management plan. Regional performance relative

to current performance baselines on all projects is periodically reviewed by the PBS Commissioner and reported to the GSA Administrator.

PROCEDURES. Project managers, with the assistance of other project team members, should start their project management plan preparation as soon as the central office authorizes the preparation of documents for publicizing the design of a project or, for building-purchase projects, notifies the regional office that funds have been apportioned. Project management plans must be completed, agreed upon by regional participants, approved by the ARA, and submitted to the AC for cosignature within 90 days after authorization to initiate the project-execution phase.

A completed management plan must be signed by the project manager, concurred in by the regional directors of Design and Construction, Real Estate, Real Property Management and Safety, Contracts, and Planning, and submitted to the central office under the approval signature of the ARA. In cases in which other regional PBS organizations play roles critical to successful project accomplishment, the concurrences of the appropriate officials at these organizations should also be included. A project management plan is considered effective upon the approving cosignature of the AC and the plan's return to the ARA.

PROJECT MANAGEMENT PLAN COMPONENTS

Each project management plan must contain, at minimum, the following components:

GOALS. The first component of the plan should be a list of project-specific goals--i.e., major, desired end-results to be focused on throughout the execution of the project. Broad in nature, project goals may be stated in

terms of GSA national programs, client requirements, schedule commitments, and/or budget limitations. Goals should have been developed in the PDS prepared during the project development stage, and should need only to be validated, updated, or supplemented in the project management plan.

OBJECTIVES. Each project goal should be detailed in terms of one or more specific, measurable objectives. Objectives are more specific than goals, and are based on factors that are quantifiable. If a PDS has been prepared for a project, it should be necessary only to verify that the objectives identified in the PDS are still valid; to update the objectives if updating is called for; and to ensure that the objectives are compatible with current project goals.

SCOPE OF WORK. This section of the plan should briefly summarize the project's scope of work in "bricks and mortar" terms. Although the scope will flow primarily from the design directives contained in the PDS, it should also be in accord with subsequent legislative authorizations and appropriations, and it should logically follow the plan's stated goals and objectives for the project.

IMPLEMENTATION STRATEGY. The strategy statements in the plan should articulate important delivery procedures and approaches to such issues as project phasing, tenant relocation, procurement, quality assurance, client participation, input from advisory and regulatory bodies, contract clearances, and needed warrants and other delegations of authority. Implementation strategy will normally have been developed in the PDS and need only be updated and/or expanded in the project management plan.

NETWORK. The project network is built on the implementation strategy and forms the skeletal framework of the project management plan. The

network depicts, graphically, each work component required for the execution of the project, at a level of detail suited to the project. Work components should all be assigned estimated durations and presented in a manner that clearly portrays the dependency of one component on another and clearly notes the early-start and late-start dates and early-completion and late-completion dates of each component. Those components on the "critical path" to project completion should be identified for specific management attention, and the "float" time for noncritical components should be readily determinable. The network should also specify, for each work component, the name of the responsible project team member.

STRUCTURING THE NETWORK. The network structure is a key link in the logical sequence of project management plan development; its delineation follows the preparation of the project's scope of work and consists of translating all of the substantive components of the scope into distinct, definable activities that are assignable to PBS organizational elements and that have an estimated time and cost for completion.

"Activities" are defined as work or effort needed to complete a particular event. Activities consume time and resources. The identification of activities is important because they are the bridge from the scope of work to the project schedule, extending into project control during execution.

In the network structure, the project manager should summarize the project's scope of work using the minimum number of activities (e.g., schematic design, design development) necessary to describe the work to be done. An excessively detailed network structure can lead to loss of control; a project manager may find that there simply is not enough time to track numerous minor activities and continuously update a complex arrangement of activities and schedules.

The development of the network structure should be a teamwide process that gives team members an opportunity to interact in the identification of activities necessary to complete the project's scope of work. The process is valuable because it requires that the team's members think logically about the way in which they will complete the project, linking activities and milestones in an orchestrated way.

If a project is straight forward in nature and does not involve many parallel activities, the management plan need not include a network.

PREPARING THE NETWORK. Team members should begin the networking process by reviewing the project's prospectus, prospectus development study, and other appropriate documents prepared prior to the team's appointment, their objective being to identify committed scheduling parameters and events that must be recognized or included in the project schedule. One of these is the planned award date for the principal project-delivery contract (construction, design/build, etc.)--the date used by the project estimator in developing the total project cost. Other milestone dates may have been established by the adoption of one or more implementation strategies.

SCHEDULING PROCEDURES. To move from the network structure to the project schedule, the team must systematically identify all activity interrelationships, best accomplished through the use of either precedence diagrams or arrow diagrams. These activity diagrams should be constructed by the team to show logical activity sequences from project-start to project-completion.

Interrelationships between activities should be indicated in terms of (1) individual activities that must be completed before succeeding activities can begin; (2) activities that must be partially completed before succeeding activities can begin; and (3) activities that must be completed before succeeding activities can be completed.

Next, optimum durations should be determined for all activities in the network structure. "Optimum duration" is the length of time in calendar days required for the completion of an activity in the most efficient manner possible, with the assumption that all preceding required activities have been completed.

The activity diagram is then converted to a time-based format that integrates the optimum durations in a timeline. With the establishment of a specific start date, early-start and late-start and early-finish and late-finish dates can be established, float-time calculated, and project-milestone dates determined.

DETERMINING THE CRITICAL PATH. The final step in scheduling is to determine the critical path through the network diagram--by definition, the path of longest duration through the network.

For projects with fewer than 100 total activities, critical activities can generally be identified through graphic inspection. Larger, more complex projects may require a tabular array of project-activity data that identifies activities, durations, and early- and late-start and early- and late-finish dates. The identification of critical activities is itself critical, because it alerts the project team to concentrate on those activities in the knowledge that delays there will delay the entire project. Computers are frequently used to facilitate network calculations and to plot network diagrams and charts. Microcomputer software is considered most efficient for 100- to 200-activity projects.

SCHEDULE. After its identification of project activities in the network structure, the project team should move into the preparation of the project schedule.

The project schedule consists of estimated dates for major milestones. The schedule is drawn directly from the network. At a minimum, the major milestones should include A-E (or design-build) solicitation, design

start, concept approval, design completion (for each phase), bidding, construction start (for each phase), and construction completion (for each phase).

BUDGET. The budget will be itemized by budget activity (including reimbursable budget activities) and components within budget activities such as site, construction, predesign, design, Management and Inspection, and other design and construction services. The total budget amount for each fund source must be within the funding constraints provided in enabling legislation (or otherwise imposed).

PROJECT TEAM ORGANIZATION. The project management plan's section on project team organization should include a listing of all project team members assigned to the project, with the roles and responsibilities of each party clearly identified. Each project team member responsible for or associated with one or more components in the network should be shown on a project team organization chart and included in an accompanying listing of roles and responsibilities.

CONCURRENCES AND APPROVALS. In this section of the plan, the project manager and the regional division directors indicate with their signatures that they agree with the plan and will commit resources (personnel, dollars, and time) to the project as outlined in the plan. The signatures of the ARA and the AC indicate their approval for the project to proceed in accordance with the delivery approach described by the plan.

CHAPTER 3. PROJECT MANAGEMENT OPERATIONS

CONTROLLING AND DIRECTING THE TEAM

The groundwork for controlling and directing the project team lies in the project manager's organization of the team, in the preparation of the project management plan, and in the project manager's ability to communicate, coordinate, and lead.

In organizing the team, the project manager should ensure that all project activities are assigned to individual team members, thus fixing responsibility for the management of day-to-day performance on each activity. The process of defining activities itself builds a solid foundation for controlling activity schedules and budget-component costs.

TEAM PROCEDURES. Project team procedures should include ways and means for individual team members to periodically report on activity performance to the project manager and other team members, enabling team-level control. As project activities are performed by or through functional organizations, masses of performance-related project information are generated. The project manager must determine how much of this information should be communicated to the team for performance review, analysis, and evaluation. In general, project managers should limit reporting from individual team members to the level of specificity and detail that can be effectively processed and that is necessary for performance evaluation in terms of the requirements expressed in the project management plan.

Project team procedures should also provide for the identification of variations from prescribed performance objectives and the determination

of corresponding actions to be taken. The team should develop methods of using past and current performance data to forecast performance; remedial courses of action can then be identified and applied in a preventive or corrective mode when unacceptable performance is foreseen.

TEAM LEADERSHIP. Because a project manager's formal directive authority is generally limited to that prescribed by the ARA, the project manager's effectiveness in accomplishing his or her roles and responsibilities is largely influenced by other variables. Among those are the project manager's personal leadership of the project team and ability to work cooperatively with functional organization directors, avoiding unnecessary involvement in functional organization activities. Also highly influential are the project manager's ability to maintain negotiating parity, plan effectively, communicate perceptively, and quickly recognize, in the mountain of performance data generated by a project, situations that require the project manager's personal attention.

The project team's preparation of the project management plan can provide the project manager with an excellent opportunity to establish and assert a project leadership role and to develop effective, supportive team methods and operating routines that contribute to the team's control functions. The plan itself, through its assignment of organizational roles and responsibilities, its statement of work, and its definitions of project schedule, budget, and organization, establishes the baseline for the evaluation of project performance and the application of control procedures from project initiation through completion.

DECISIONMAKING AND PROBLEM RESOLUTION

A project manager is both a manager of project-related decisions and a decisionmaker in the functioning of the project team. In either capacity,

the project manager must be highly sensitive to the impact that key decisions may have on project activities. The exercise of sound, timely judgment is an important part of the job.

A project manager's experience will generally dictate judgement at decision-points that have, on past projects, proven complex, problematic, or time-consuming. To the extent that these "turning points" can be anticipated, they should become focal points for the project manager's attention.

Project management demands a wide range of decisions. One of those is deciding when actual or projected performance problems demand corrective steps. In its ongoing management role, the project team should be positioned to anticipate such problems and alert the appropriate decisionmakers of the need for action. The project manager, to ensure that the decisions made are timely and appropriate, should follow up on all such instances. When potential courses of action affect other project activities, those effects should be analyzed to ensure that the decisions made have the least unfavorable impact on overall project performance. Project managers must respect the authority of functional-organization directors when the issue at stake is either "how" project activities will be accomplished or "how" any required corrective measures will be effected.

The project manager in conjunction with the project team may wish to set up general procedures for identifying problems, analyzing the facts bearing on problems, and developing solutions.

UPDATING THE MANAGEMENT PLAN

The project manager and other team members are responsible for ensuring that project activities are performed in strict accordance with the current project management plan and identifying situations in which

revision of the plan may be necessary. The project manager is responsible for keeping the plan up to date and for preparing and submitting plan revisions for approval whenever it first becomes apparent that achievement of one or more of the project's stated goals may be in jeopardy. Copies of approved revisions should be provided to the AC and all other affected parties, including project team members.

CONTROLLING THE SCHEDULE

Project schedule control should be addressed by the project team regularly, at weekly (or other appropriate) intervals. Schedule control should begin with an assessment of the current percentage of completion reached for each activity identified in the project schedule. "Percentage of completion" should be judged in terms of the actually completed proportion of an activity. The individual team member responsible for each activity is best positioned to estimate the related percentage of completion. After the percentages of completion have been estimated for all activities, each activity's percentage should be multiplied by the activity's corresponding cost estimate in the budget. The products of these extensions are totaled to provide the total value of completed project activity to date. Dividing this total value by the total project budget produces the overall project's percentage of completion.

To determine whether overall project completion is on schedule, the team should compare the current date with the scheduled date for the same value of project completion--easily documented on a graph by using cumulative cost/time coordinates to plot scheduled and actual project progress. Where it is apparent that the project is behind schedule, it is necessary to identify those activities causing the lag in progress. This should be done on the network diagram by striking a current time-line and indicating the percentage of completion for each activity. Color-coding or other graphic techniques designed to show proportional

completion for each activity will facilitate the analysis. The network will also show which activities on the critical path are behind schedule and which are not.

CONTROLLING THE BUDGET

Budget control, like schedule control, is based on project activities identified in the network structure and carried forward into the budget with associated cost estimates for each activity. The total project budget also includes such added, nonactivity items as design, construction and delay contingencies, and targeted savings.

Responsibility for cost-control management on each project activity is assigned to the functional organizations and the team members representing those organizations. Funding sources are also identified for each activity, with sub-project budgets accumulated by funding source. During weekly (or otherwise appropriately recurring) team meetings, team members should report on the budget status of each activity. This information should be regularly recorded in a chart format that lists each activity and the budget data associated with that activity, including the activity's baseline estimate from the initial project management plan, its most recently approved estimate, its current estimate, its cost variances, and its forecasted estimate. The project totals under each of these headings plus the nonactivity items portray the project's current total budget status.

QUALITY ASSURANCE

The requirements for quality assurance (QA) in the project management context are consistent with standing PBS guidance on design review and

construction inspection, and should be applied to cover all traditional and nontraditional project-delivery approaches.

Quality-related evaluation is the responsibility of the project manager, who should require the appropriate reports at project milestones and employ other selected measures to assure that the QA program is being effectively accomplished and that quality-related project objectives are achieved.

CHAPTER 4. PROJECT DOCUMENTATION

PROJECT REPORTING

The project manager and the other members of the project team must develop a procedure to provide for the collection and reporting of project activity performance data, in order to facilitate review and analysis of project progress and the identification of problems requiring further attention. This procedure should accommodate the management information needs of several levels of PBS management, including the day-to-day requirements of the project team members responsible for individually assigned project activities, the weekly requirements of the project management team, and the requirements of the monthly management reports. It should recognize and provide for flash-reports on circumstances requiring immediate action. The team's reporting procedure should also recognize the continuing project-information requirements of other PBS reports. Finally, the reporting procedure should be organized to avoid or minimize repetition or duplication, and should take advantage of standardized formats and automation techniques.

MONTHLY REPORTS. A recommended monthly reporting format for a typical design and construction project is shown in Figure 3. Sections of the report should be as follows:

PROJECT IDENTIFICATION. The title of the project, as specified in the prospectus or other authorizing document.

PROJECT STATUS. A narrative presenting any current issues and problems, remedial plans to resolve those issues and problems, and a description of upcoming activities or events of general interest to management.

PROJECT SCHEDULE. A report on major-milestone progress, covering schedule status and variances and including milestones identified in the project management plan.

PROJECT BUDGET. A status report covering each budget activity and component identified in the Project Management Plan, with updates on total funds available, obligations to date, current funds balance, estimated future requirements, and projected funds balance.

RACATS INPUT. RACATS data input should be an ongoing process as events occur. Each time a scheduled event does not occur on time, the resulting impact on succeeding events must be assessed and any resulting "downstream" schedule changes must be entered. Project managers should review the PBS-IS RACATS at least on a monthly basis to ensure that project status reports from the functional organizations are current and complete.

PROJECT RECORD-KEEPING

The organization, development, maintenance, and ready availability of complete project records are vitally important to the project manager's performance of project related duties. The project manager is responsible for organizing and developing a project record-keeping system and for ensuring that records are maintained and made readily available.

I. PROJECT IDENTIFICATION

CITY:	BUILDING:	PCN:	FISCAL YEAR FUNDING DESIGN:	FISCAL YEAR FUNDING CONSTR:	DATE OF THIS REPORT
DESCRIPTION:					

II. PROJECT STATUS

CURRENT ISSUES/PROBLEMS:

REMEDIAL PLANS TO RESOLVE ISSUES/PROBLEMS

INFORMATIONAL ITEMS/SIGNIFICANT EVENTS/UPCOMING ACTIVITIES:

Figure 3-1
Monthly Status Report

III. PROJECT SCHEDULE

MAJOR MILESTONE	OMB APPROVED MGMT PLAN SCHEDULE (1)	CURRENT MGMT PLAN SCHEDULE (2)	CURRENT EST(E) OR ACTUAL (A) SCHEDULE (3)	< IF VARIANCE BETWEEN (2) AND (3) > EXPLANATION (4)
CD/FDSE AUTHORIZATION				
CBD				
DESIGN AWARD				
DESIGN COMPLETE				
CONSTRUCTION AWARD				
CONSTR. COMPLETE (BY PHASE) *				

* MILESTONES REPORTED SHOULD BE CONSISTENT WITH THE MAJOR MILESTONE IN THE APPROVED MANAGEMENT PLAN

IV. PROJECT BUDGET

BUDGET COMPONENT	TOTAL FUND AVAILABLE	OBLIGATIONS TO DATE (5)	CURRENT FUND BALANCE (6) = (5)-(1)	ESTIMATED FUTURE REQUIREMENTS (4)**	PROJECTED FUND BALANCE (7) = (6)-(4)
SITE BA51 OR 55					
CONSTR BA51 OR 55					
(BY PHASE)					
SUBTOTAL BA51 OR 55					
DESIGN BA80					
M&I BA80					
OTHER BA80					
SUBTOTAL BA80					
CONSTR BA60					
DESIGN BA60					
M&I BA60					
OTHER BA60					
SUBTOTAL BA60					

** IF FUNDS FOR ANY PARTICULAR BUDGET COMPONENT ARE NOT AVAILABLE, ESTIMATED FUTURE REQUIREMENTS NEED NOT BE SHOWN

Figure 3-2
Monthly Status Report

This system should be coordinated with the functional organizations involved and consistent with established PBS record-keeping policies; the functional organizations remain responsible for maintaining records that traditionally have been maintained in their respective offices.

Without interfering with ongoing PBS assignments and procedures in the maintenance of official records, the record-keeping system should confirm the project manager's understanding of responsibilities for the custody and maintenance of various project-record components. It should also state the project manager's expectations concerning the organization, identification, location, completeness, maintenance, and accessibility of files and other records.

PROJECT FILES. The project manager should organize and develop project files which provide convenient reference information relating to ongoing project team methods, practices, and procedures. Sections of the files should address such topics as team organization, project documentation, the project directory, the distribution matrix, approval authorities and processes, reporting instructions, and other key procedural matters. The project manager should also organize and develop files containing documents on project activities. These documents include a diary of the project and a repository of information on current project status, including records of meetings, telephone calls, correspondence, memoranda and other similar transactions.

Documentation should be placed in the project files to ensure that a complete collection of project-related information can be quickly and easily located by project team members, both to contribute to other current project management efforts and to provide a comprehensive record of project transactions that will support the resolution of future disputes and other issues.

Individual project team members should develop similar files for ready reference, focused on their individual areas of responsibility.

FUNCTIONAL-ORGANIZATION RECORDS. The project manager may, through the functional-organization representatives on the project team, obtain commitments from those organizations to provide and maintain "convenience documents" for use in the day-to-day activities of project management. The project manager should exercise selective judgement in determining which project documents will be required for personal review, and should communicate those determinations to each team member, specifying (in writing) those documents to be copied for the project manager's reference.

PROJECT CLOSEOUT

When a project is completed, the project manager is responsible for ensuring that the project's records are complete and that a system is in place that enables the appropriate personnel to identify and locate needed project-record documents.

The project manager should anticipate a subsequent post-occupancy evaluation of the completed facility by an evaluation team, and provide specific guidance for locating project records that will be required for the team's activities.

Finally, the project manager should prepare and submit to his or her appointing authority a report that summarizes the project team's performance on the project. The achievement of project goals and objectives should be addressed specifically. The project manager's report should conclude with appropriate recommendations for improved performance or efficiency, particularly including recommendations relevant to the application of project management at PBS.